IN THE TITLE:

Replace the title with:

INDUCTOR ~~WHOSE~~ HAVING SMALL ENERGY LOSS ~~IS SMALL~~

SPECIFICATION AMENDMENTS

Replace the paragraph beginning at page 1, line 9 with:

A small and high-density integrated monolithic microwave integrated circuit (MMIC) has attracted attention as a high-frequency circuit used for mobile communication, satellite communication or the like. This is a microwave integrated circuit of a multi-layer structure in which an active device (a field effect transistor (FET), a high electron mobility transistor (HEMT) or the like) and a passive device (a transmission line, a capacitor, an inductor or the like) are mounted together on a semiconductor substrate. In recent years, the high-frequency circuit has been fabricated with ~~a~~ complementary metal-oxide semiconductor (CMOS) circuitry. In this MMIC, a spiral inductor is often used as an inductor. The spiral inductor has a spiral, electrically conductive pattern wound ~~around on~~ in a plane. At least one of the outside and inside terminals of the conductive pattern is electrically connected to an electrode ~~provided~~ on another wiring layer through a via hole or a through hole. The spiral inductor has an advantage that the number of wiring layers necessary for forming the inductor ~~can be~~ is reduced.

Replace the paragraph beginning at page 1, line 25 with:

When a voltage is applied between the outside and inside terminals of the spiral inductor, a spiral current flows in the conductive pattern to induce magnetic field around the inductor. Particularly, at the central portion of the spiral, a magnetic flux is generated which penetrates the plane ~~on which~~ of the conductive pattern ~~is formed~~. This magnetic flux enters ~~a~~ the semiconductor substrate (non-insulating substrate). Now, when the magnetic flux is changed in accordance with the current flowing through the spiral conductive pattern an, eddy current is generated in the substrate by ~~an~~ electromagnetic induction ~~effect~~. Since this eddy current is generated in the direction ~~of~~ opposing the magnetic flux, the magnetic flux density is reduced. As a result, ~~a~~ self-inductance (L) of the spiral inductor is reduced and ~~a value of~~ the quality factor (Q) ~~thereof~~ is lowered. In a word, energy loss is large in the conventional spiral inductor. In addition, energy loss is large in an integrated circuit including such a spiral inductor as a whole since energy loss in the spiral inductor is large.

Replace the paragraph beginning at page 6, line 13 with:

~~Fig. 1 shows~~ Figs. 1A and 1B show a spiral inductor according to the first embodiment of the present invention, in which Fig. 1A is a plan view of the spiral inductor, and Fig. 1B is a sectional view taken along ~~break~~ line ~~A-A~~ IB-IB in Fig. 1A. The spiral

inductor 1 has a laminated structure in which a wiring layer and an insulating layer are layered alternately on a semiconductor substrate 2. Referring to Fig. 1B, the laminated structure has wiring layers 3 and 4, an insulating layer 5 interposed between them and an insulating layer 6 interposed between the wiring layer 4 and the semiconductor substrate 2. More specifically, the insulating layer 6, the wiring layer 4, the insulating layer 5 and the wiring layer 3 are layered on the semiconductor substrate 2 in this order. Each of the wiring layers in the spiral inductor 1 has an electrically conductive pattern made of aluminum (Al), copper (Cu) or the like. As shown in Fig. 1A, the spiral inductor 1 includes first and second winding parts 7 and 8. The first and second winding parts 7 and 8 are wound around on a single plane on the wiring layer 3 which is the uppermost layer of the laminated structure. Here, each of the first and second winding parts 7 and 8 has a shape wound around spirally from outside to inside only once. In addition, the spiral winding consists of straight-lines connected to each other at right angles like a rectangle. The first and second winding parts 7 and 8 have the same shape.

Replace the paragraph beginning at page 12, line 24 with:

~~Fig. 2 shows~~ Figs. 2A and 2B show a spiral inductor according to the second embodiment of the present invention. Fig. 2A is a plan view of the spiral inductor, and Fig. 2B is a sectional view taken along ~~break~~ line ~~B-B~~ IIB-IIB in Fig. 2A. ~~A~~ The spiral inductor 21 according to this embodiment is different from the spiral inductor ~~1~~ according to the first embodiment in that an insulating layer and a wiring layer are layered in this order on the uppermost layer of the laminated structure of the spiral inductor ~~1~~ as shown in Fig. 2B. In addition, on this wiring layer, the same winding parts as those of the spiral inductor according to the first embodiment are arranged.

Replace the paragraph beginning at page 18, line 20 with:

~~Fig. 3 shows~~ Figs. 3A-3C show a spiral inductor according to the third embodiment of the present invention. Fig. 3A is a plan view of the spiral inductor, and Fig. 3B is a sectional view taken along break line ~~C-C~~ IIIB-IIIB in Fig. 3A. ~~A~~ The spiral inductor 41 according to this embodiment is different from that ~~1~~ according to the first embodiment in that a wiring layer 42 is further provided between the wiring layers 3 and 4 in the laminated structure of the spiral inductor ~~1~~ as shown in Fig. 3B. In addition, an insulating layers 43 is provided between the wiring layers 42 and 3, and an insulating layers 44 is provided between the wiring layers 42 and 4. On the wiring layer 42, there are provided two winding parts 45 and

46 having the shapes of rectangular open loops, different from those of the two winding parts on the wiring layer 3.

Replace the paragraph beginning at page 23, line 12 with:

~~Fig. 4 shows~~ Figs. 4A-4C show a spiral inductor according to the fourth embodiment of the present invention. Fig. 4A is a plan view of the spiral inductor, and Fig. 4B is a sectional view taken along ~~break~~ line ~~D-D~~ IVB-IVB in Fig. 4A. A spiral inductor 61 according to this embodiment is different from the spiral inductor ~~1~~ according to the first embodiment in that wiring layers 63 and 64 are further provided between the wiring layer 4 and the semiconductor substrate 2 in the laminated structure of the spiral inductor ~~1~~ as shown in Fig. 4B. In addition, insulating layers 66, 67 and 68 are provided between the wiring layer 4 and the wiring layer 63, between the wiring layers 63 and 64 and between the wiring layer 64 and the semiconductor substrate 2, respectively. Wiring parts 70, 71 and 72 each of which has a single path from one terminal to the other are provided on the wiring layers 4, 63 and 64, respectively.

Replace the paragraph beginning at page 28, line 7 with:

~~Fig. 5 shows~~ Figs. 5A and 5B show a spiral inductor according to the fifth embodiment of the present invention. Fig. 5A is a plan view of the spiral inductor, and Fig. 5B is a sectional view taken along ~~break~~ line ~~E-E~~ VA-VA in Fig. 5A. A spiral inductor 81 according to this embodiment is different from the spiral inductor ~~1~~ according to the first embodiment in that a wiring layer 82 is further provided between the wiring layer 4 and the semiconductor substrate 2 and an electromagnetic shielding plate 84 made of a superconductor is disposed on the wiring layer 82. The insulating layer 6 is provided between the wiring layers 4 and 82. In addition, an insulating layer 83 is provided between the wiring layer 82 and the semiconductor substrate 2.

Replace the paragraph beginning at page 29, line 19 with:

In addition, the structure in which the superconductor which repels the magnetic field is disposed between the substrate and the nearest wiring layer from the substrate can be applied to a conventional spiral inductor. Even if it is applied to the conventional spiral inductor, there can be provided the same advantage that the magnetic flux which enters the substrate can be reduced and energy loss of the spiral inductor can be reduced. ~~Fig. 6 shows~~ Figs. 6A and 6B show another spiral inductor according to this embodiment, in which the

superconductor which repels the magnetic field is provided in the conventional spiral inductor wound around spirally on the same plane. Fig. 6A is a plan view of the spiral inductor and Fig. 6B is a sectional view taken along ~~break~~ line ~~F-F~~ VIA-VIA in Fig. 6A.

Replace the paragraph beginning at page 31, line 1 with:

~~Fig. 7 shows~~ Figs. 7A and 7B a spiral inductor according to the sixth embodiment of the present invention. Fig. 7A is a plan view of the spiral inductor, and Fig. 7B is a sectional view taken along ~~break~~ line ~~G-G~~ VIIA-VIIA in Fig. 7A. A spiral inductor 101 according to this embodiment is different from the spiral inductor ~~1~~ according to the first embodiment in that two winding parts 102 and 103 provided on the wiring layer 3 have ~~the~~ shapes such that the corners of the winding parts 7 and 8 wound ~~around~~ in the shape of a rectangle are removed.